

A vintage beige computer monitor and keyboard are positioned on the left side of the slide. The monitor is a CRT type with a distinctive wedge-shaped base and a screen that is slightly tilted. The keyboard is a full-sized, beige, low-profile model. The background is a solid, light beige color.

# **Metropolitan Nashville Public Schools**

## **2006-2011 Information Technology Plan**

**Lance Lott**

**Assistant Superintendent,  
Technology and Strategic Planning**

# **Are MNPS Students Ready for 21<sup>st</sup> Century Workplace?**

“Our high school students are poised to enter the global marketplace or to continue their education beyond K-12, and we must ready them for a “flat” world in which competition for jobs and higher education is fierce. In addition to increasing the rigor and relevance of core academic subjects and creating inquiry-based learning environments that stress collaboration, critical thinking, and problem solving, we must educate and support a diverse population of students with different learning styles to ensure that each has the opportunity to succeed.”

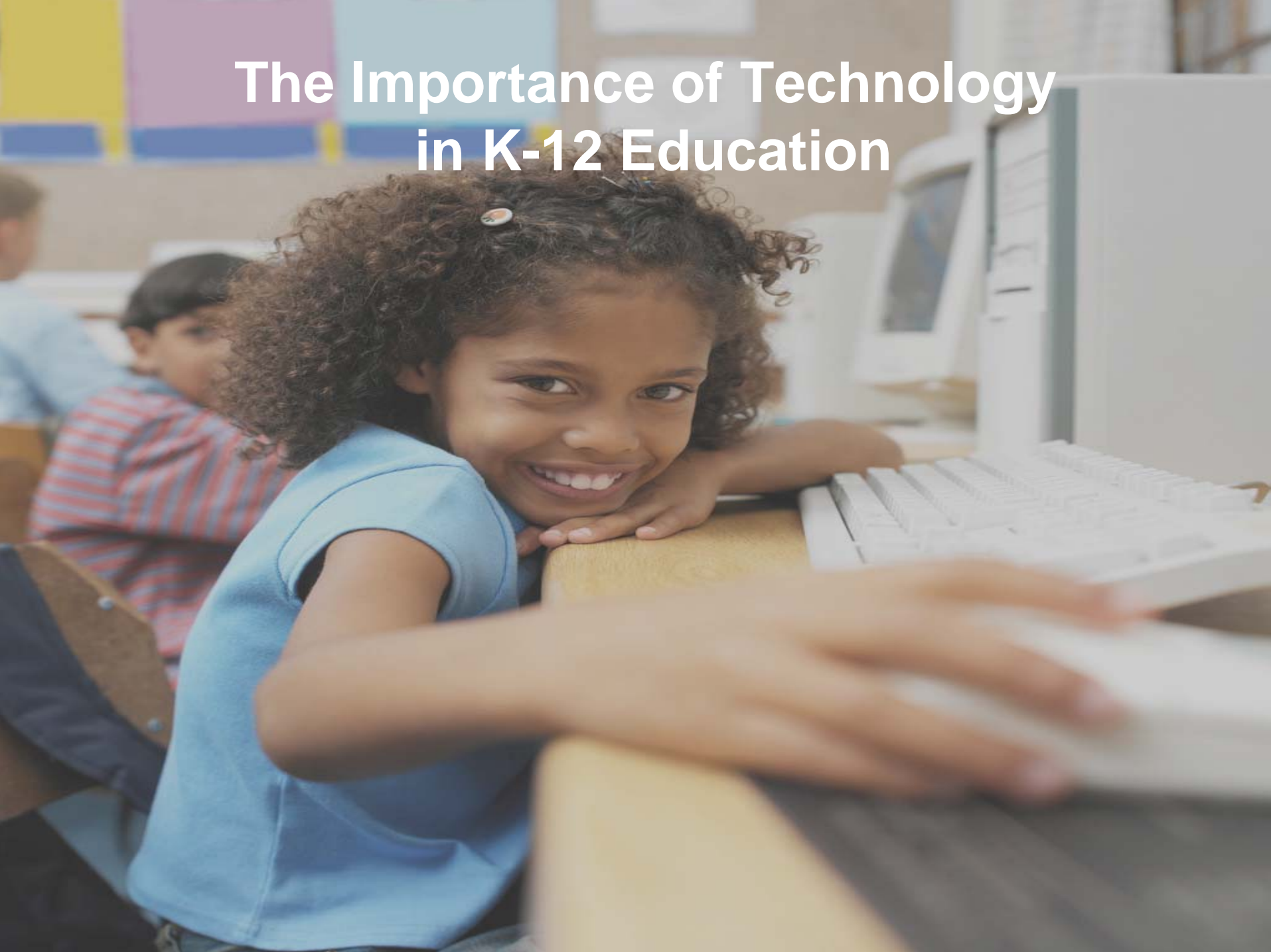
Michael Golden  
Deputy Secretary  
Office of Information and Education Technology  
Pennsylvania Department of Education

# Highlights

- Importance of Technology in K-12 Education
- History of Technology in MNPS
- Comparison of MNPS to Others
- The Road Ahead: MNPS IT Plan Maps the Way

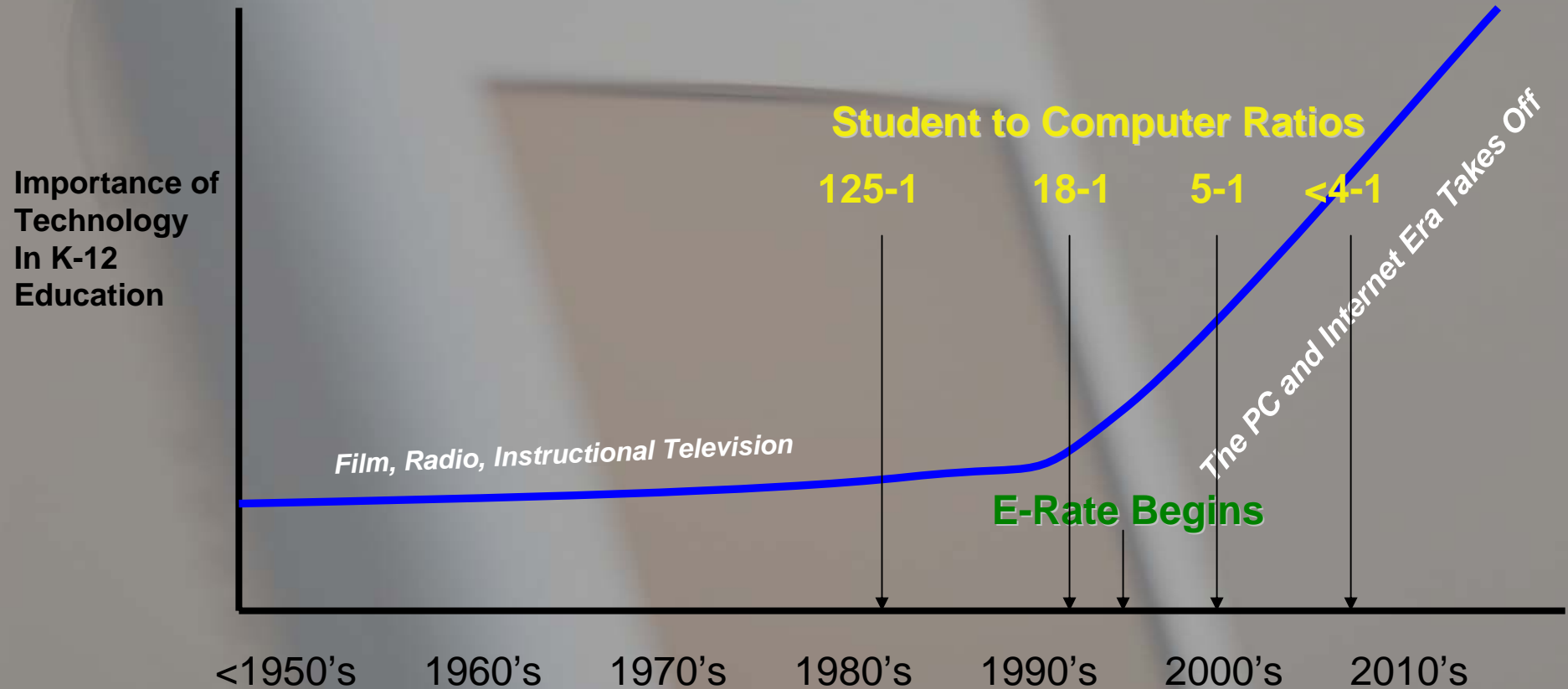


# The Importance of Technology in K-12 Education

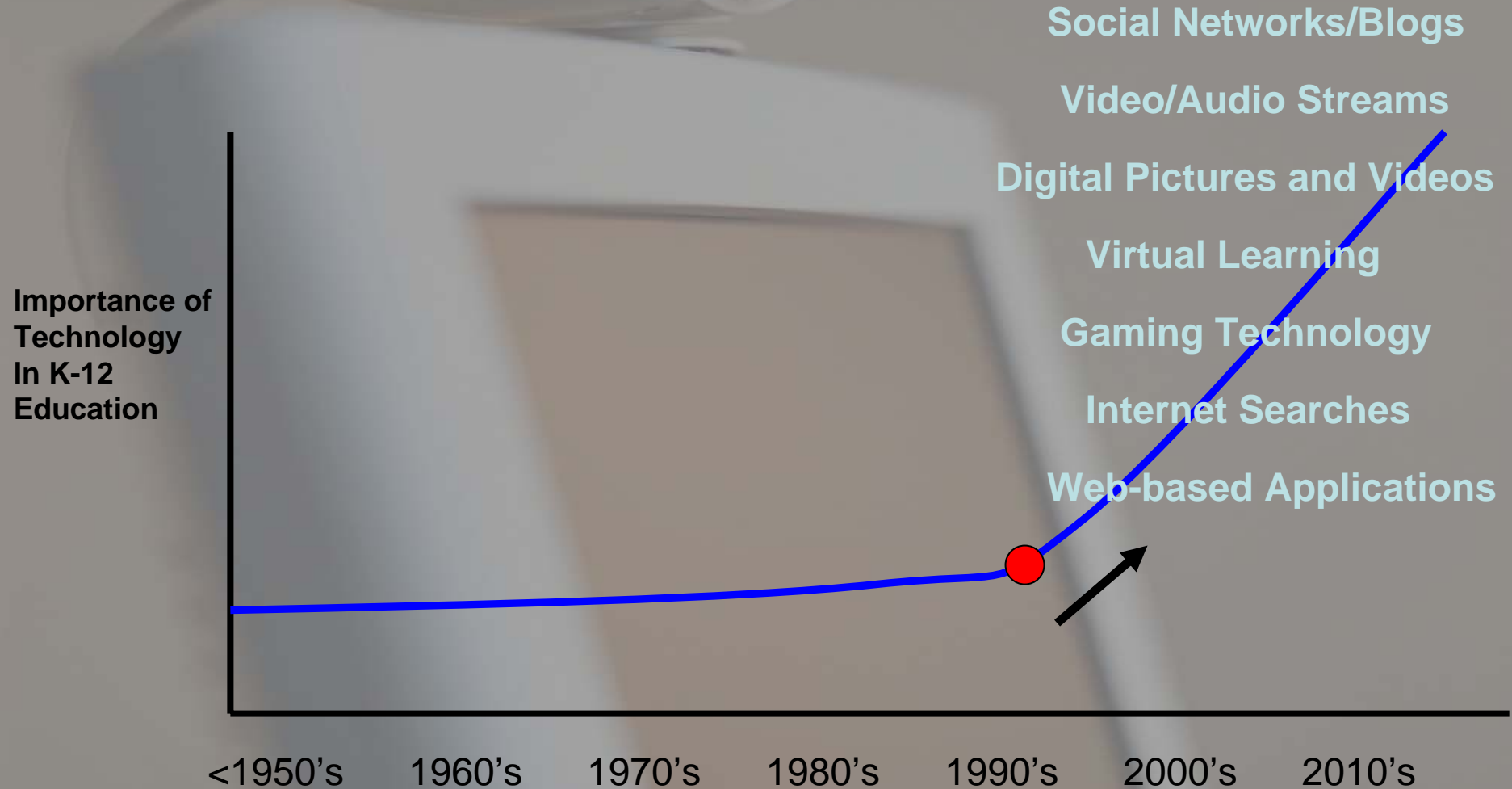




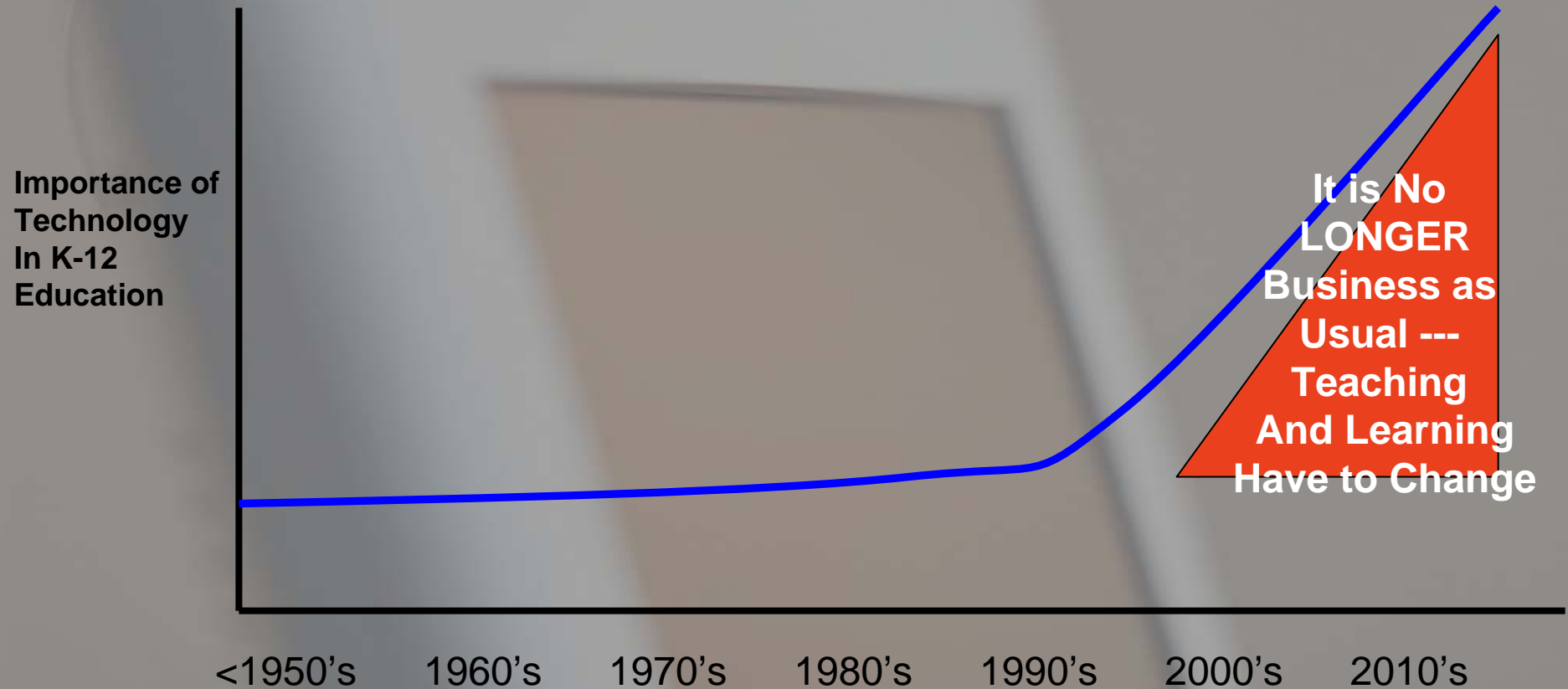
# Technology Adoption in K-12 Education



# Technology Adoption in K-12 Education



# Technology Adoption in K-12 Education



# Research Supporting Technology in Education

**Driven by Research  
and the Proliferation  
of Technology in the  
1990's**



**Literacy-  
Internet Use  
Computers in the  
Classroom**

**1997-2006**

**Workforce/  
College Prep. -  
Career and  
Technical Ed.**

**Academic  
Achievement  
Test Scores**



# Literacy Phase 1990's

## The Role of Standards

- Students use of technology was the emphasis of research rather than technology supporting content (NEIRTEC, 2002).
- This focus resulted in establishing standards at the national, state and local levels.
- National standards were created by the International Society for Technology in Education (ISTE) and have been adopted by all states as state standards.
- Most districts lead standard development with the adoption of ISTE and state standards.

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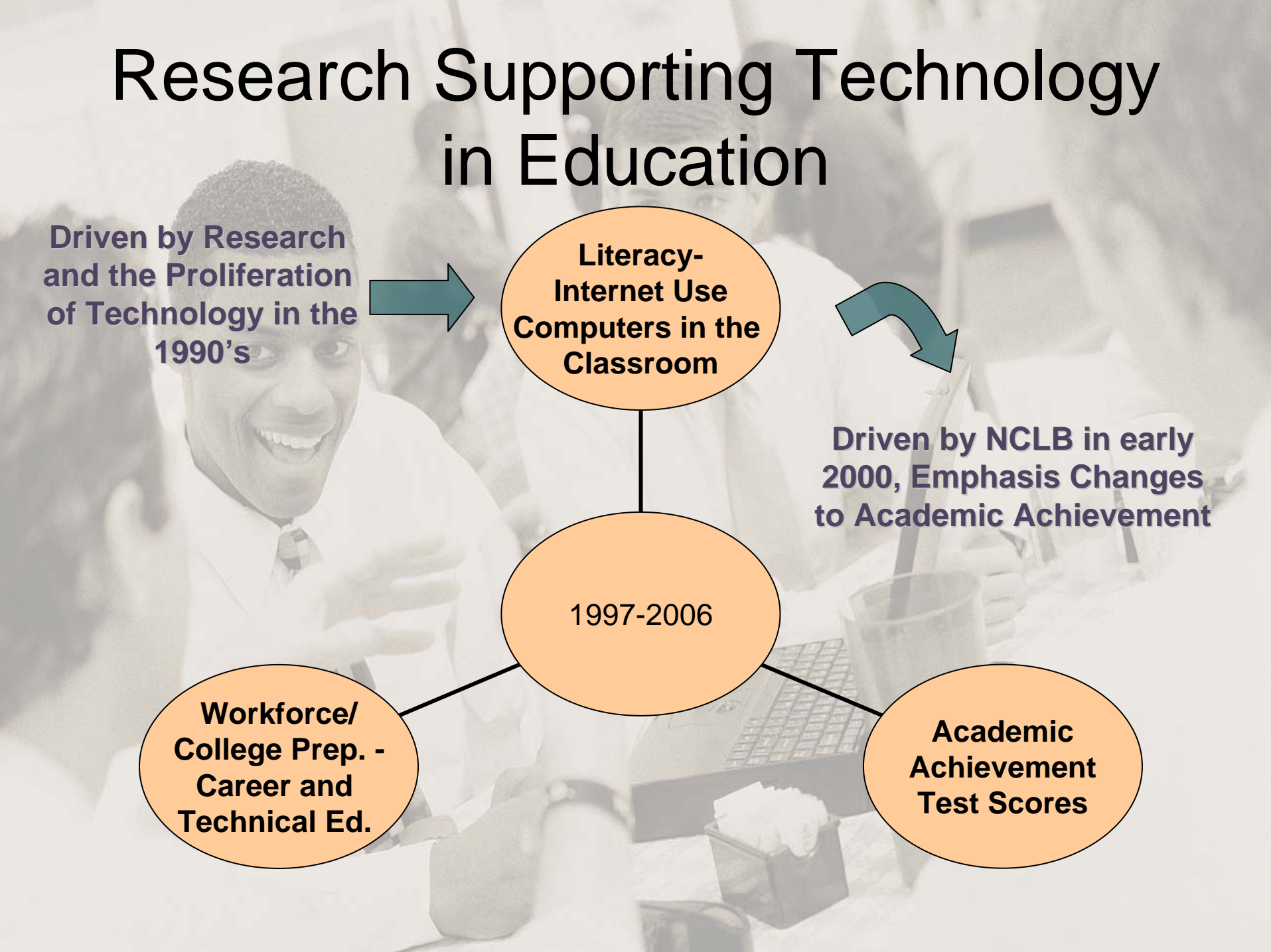


**Driven by NCLB in early  
2000, Emphasis Changes  
to Academic Achievement**

**1997-2006**

**Workforce/  
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**Academic  
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Test Scores**



# **Academic Achievement Phase 2001**

## **Driven by NCLB Requirements**

- Students score higher when teachers had professional development on technology integration (Billing, 2003)
- School climate and lower absenteeism rates are also associated with technology integration (Billing, 2003)
- District leaders can use technology tools to collect, organize, analyze, disaggregate, and report on student achievement and other district data (NEIRTEC, 2002)
- Technology can be used to support different learning styles and meet the needs of all learners in the district (Honey, 2001)

# **Academic Achievement Phase 2001**

## **Driven by NCLB Requirements**

- Student attendance improves and dropout rates decline when technology is a routine part of the school experience (ACOT, 2002)
- Technology has positive effects on student achievement and attitude toward learning (Sivin-Kachala et al., 2000)
- Evidence that using technology in the classroom enhances overall academic achievement (Evaluation Team Policy Brief, 2001)
- Students using technology coupled with inquiry-based instruction improved math scores (Page, 2002)
- Teachers must reconsider their methods and curricula in order to effectively integrate technology to improve student learning (Waddoups, 2004)



# Research Supporting Technology in Education

**Driven by Research  
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**Driven by NCLB in early  
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**1997-2006**

**Workforce/  
College Prep. -  
Career and  
Technical Ed.**

**Driven by Low  
Graduation (est. 2004)  
Emphasis Changes  
To Career and College**

**Academic  
Achievement  
Test Scores**





# College and Workforce Preparedness (2004)

- Students perform better on standardized tests when technology is infused into the learning environment (Little, 2006)
- Students Transition 8<sup>th</sup> Grade Tech Literacy into Other Learning Environments (Little, 2006)
- Students Use Technology
  - As a Tool in Project-based and Inquiry-based Learning
  - To Solve Problems and Think Critically
  - To Increase Their Options – To Prepare Them for Career
  - To Collaborate and Innovate
- Students Prepare for Work-based Learning Experiences
- Students Have Increased Options Due to Exposure to Technology in School
- Students Can Become Eligible for Articulation Agreements With Post Secondary Institutions

## **Importance – Use of Technology and the Digital Divide**

- Use of computers and the Internet has been associated with improvements in people's education, labor market prospects and everyday lives (National Research Council, 1999)
- Computer use rates may indicate how well prepared today's students are to enter a workforce where computer literacy is in demand (US DOE, 1999b)

# Digital Divide: Impact on Academic Achievement

- Digital Divide Does Exist and Impact Achievement

Category	% Using Computers	% Using Internet
White	93	67
Black	86	47
Hispanic	85	44
Poverty	84	40
Not in Poverty	93	66
Parent <HS	82	37
Parent College	92	67

Source: U.S. Census Bureau, Current Population Survey, October 2003

# Digital Divide: Impact on Academic Achievement

- Schools Help Bridge Digital Divide
  - 20% only access Internet at one location
    - Of this group, schools are that location for 60% of those living in poverty and 63% of those from households whose parents have not earned at least a high school degree

Source: U.S. Census Bureau, Current Population Survey, October 2003

# **Importance of Technology in MNPS**

## **Summary and Relevance**

- National, State, and Local Technology Standards (ISTE)
- Evidence of Academic Achievement (Research)
- Strategic Plan Linkage
  - District School Reform / Graduation Rate
  - Relevance, Rigor, Relationships
- MNPS Student Outcomes and Benefits
  - College Readiness
  - Regional Workforce



# History of Technology in MNPS



# History of Technology in MNPS

## Info

### 2002-2006 Plan Accomplishments

#### Early Adopter Era 1980's-2001

This era was characterized by limited technology use in MNPS. It was funded opportunities that benefited a number of innovative teachers, e.g. A SFT, 21<sup>st</sup> Century Classroom, Library Power, MAC School.

#### Planned Adoption Era 2002-2006

This era saw the systematic provisioning of technology to all certificated staff. Teachers used the technology to read and respond to email, and keep student information, e.g. attendance and grades. There was also limited but growing use of the MS Office products and Inspiration/Kidspiration.

all schools and classrooms  
Internet access – schools/ central office  
network access (VPN)  
EduSoft assessment software.

#### Academic Achievement Era 2006-2011

This era, guided by a new IT Plan, will see extensive deployment of technology to schools and classrooms, and measured use of the technology integrated with the curriculum. Additionally, this era will see a resulting positive impact on student achievement.

#### Academic Achievement Era

#### Early Adopter Era

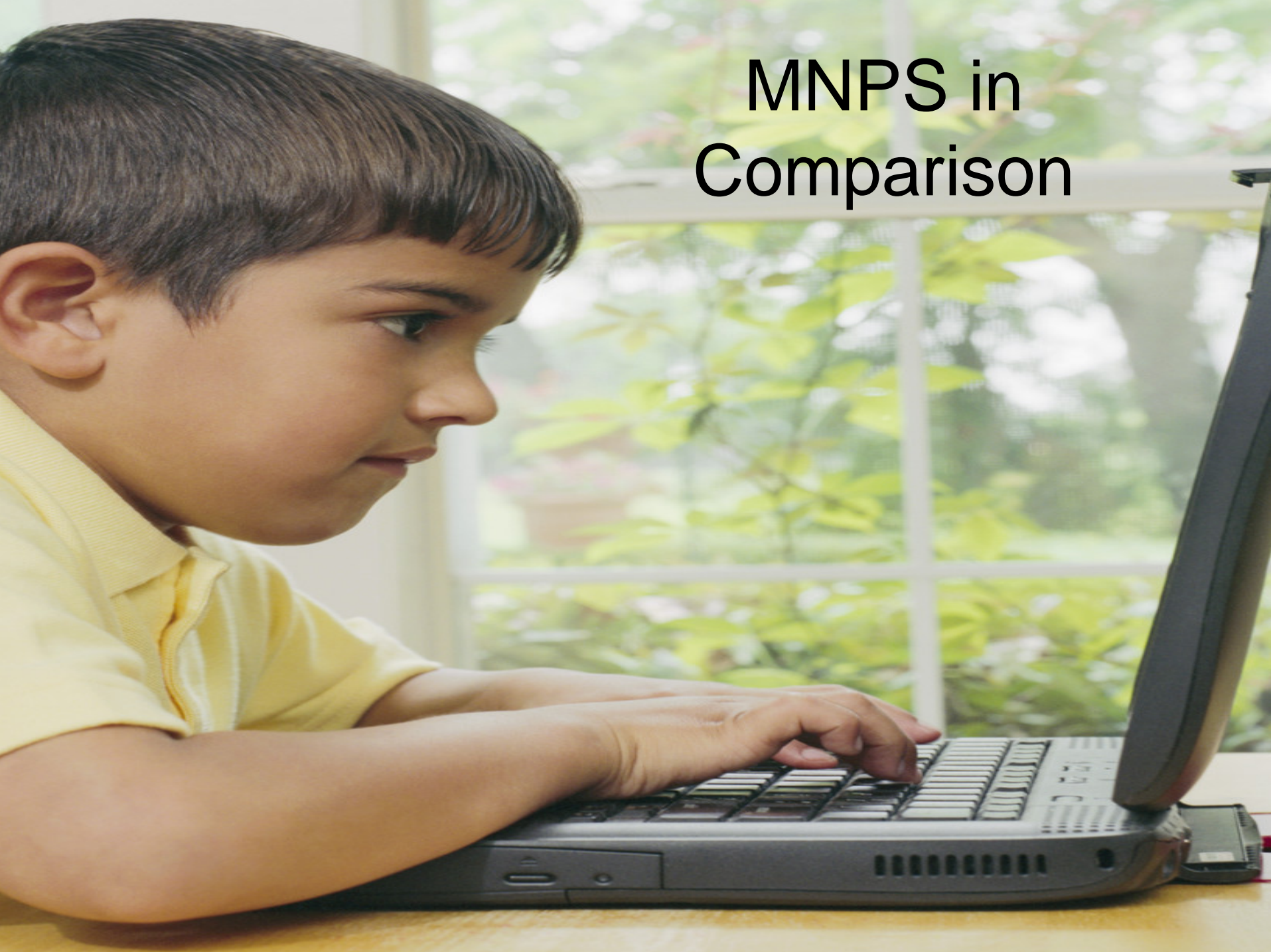
#### Era

<99 00 01 02 03 04 05 06 07 08 09 10 11 12

Years



# MNPS in Comparison



# Middle Tennessee Comparisons

County	Number of Students	Number of Schools	Student Access	Teacher Access	Professional Development	Curriculum
MNPS	73,000	132	4:1	1:1	2 Trainers in Central Office 7 Technology Integration Specialist	District Standards to be implemented in 2006-2007 school year
Williamson County, TN	25,530	35	4:1	1:1	3 PD Coaches in Central Office 35 Academic Specialist	Required literacy exam in 8 <sup>th</sup> grade, district standards
Montgomery County, TN	25,767	30	3:1	1:1 Laptops	1 Academic Coach for each elementary and MS/HS subject area	NA
Rutherford County, TN	31,200	38	5:1	1:1	4 Instructional Technology Specialists @ district level & 25 school based	District standards aligned with ISTE national standards,

# Statewide Comparisons

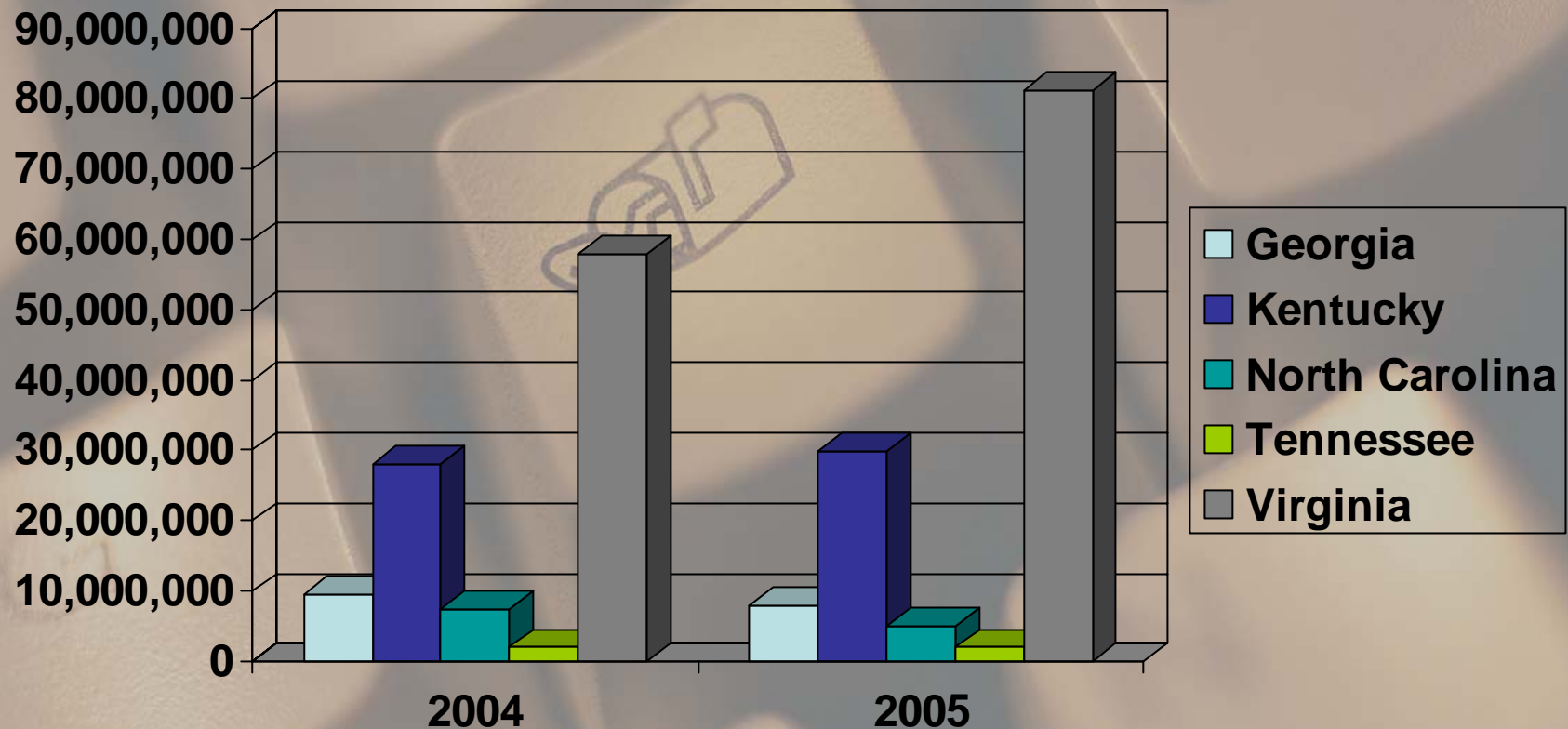
County	Number of Students	Number of Schools	Student Access	Teacher Access	Professional Development	Curriculum
MNPS	73,000	132	4:1	1:1	2 Trainers in Central Office 7 Technology Integration Specialist	District Standards to be implemented in 2006-2007 school year
Shelby County, TN	45,000	48	5:1	1:1 Laptops	3 Trainers in Central Office 1 Tech Specialist assigned to five schools	Lessons integrating technology are posted online as teacher resources
Knox County, TN	53,130	88	4:1	1:1	6 Trainers in Central Office, Tech Coach @ each school	District standards implemented 2005-2006 are aligned with ISTE national standards
Memphis City, TN	118,000	185	5:1	1:1	4 Trainers in Central Office, 6 Coaches for school sites	District standards for grades pre-K-12 aligned with ISTE national standards



# Nationwide Comparisons: District to District

County	Number of Students	Number of Schools	Student Access	Teacher Access	Professional Development	Curriculum
MNPS	73,000	132	4:1	1:1	2 Trainers in Central Office 7 Technology Integration Specialist 38 Technical Support Specialists	District Standards based on ISTE to be implemented in 2006-2007 school year
Henrico County, VA	47,071	66	1:1 (M/H) 4:1 (E)	1:1 Laptops	Not Available	State standards, state law governing technology literacy of teachers, District standards based on ISTE
Wake County, NC	114,092	134	3:1	1:1	7 Trainers in Central Office Tech Coach @ each school	District Standards Aligned with ISTE
Poway USD, CA	33,000	33	3:1	1:1	3 Trainers in Central Office Tech Specialist @ each school	District standards based on ISTE
Cobb County, GA	104,000	110	5:1	1:1 Laptops	18 Trainers @ District Level 110 Tech Specialists	Technology standards integrating into academic standards

# State Funding Allocated for Educational Technology



Source: Editorial Projects in Education Research Center, Technology Counts 2006

A black laptop is open on a light-colored wooden floor. In the background, there is a window with white horizontal blinds. A power cord is plugged into the laptop and extends across the floor towards the foreground. The text "The Road Ahead..." is overlaid on the right side of the image in a large, white, serif font.

# The Road Ahead...

...if you don't know where you are going, any road will get you there

# Linkage to Strategic Plan

- District School Reform / Graduation Rate
- Technology Enabled Reforms e.g., Distance Learning
- Rigor, Relevance, Relationships
  - ***Rigor*** - Increased Academic Achievement
  - ***Relevance*** – Connecting With Today's World / Building Lifelong Learners
  - ***Relationships*** - Facilitating Collaboration



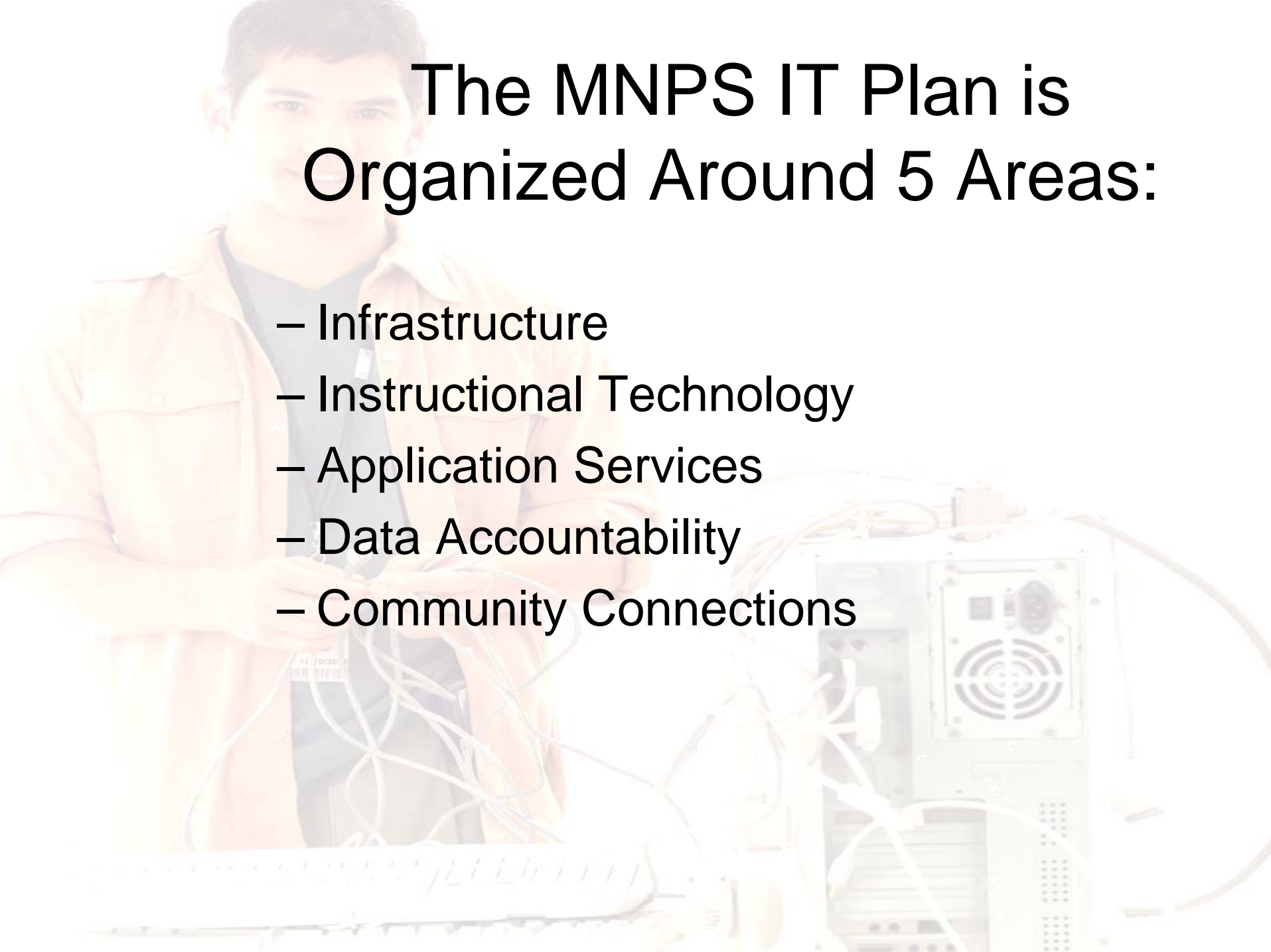
# MNPS IT Plan

- Why a New IT Plan Now?
  - Need a Plan to Guide us in this new era of technology in MNPS (...if you don't know where you are going, any road will get you there)
  - Many campuses have outdated infrastructure and equipment
  - Many teachers unprepared to teach with technology
  - Many teaching methods becoming obsolete
  - Large expenditures needed to address – must be prioritized around goals
  - Need accountability for adopting technology



# The MNPS IT Plan is Organized Around 5 Areas:

- Infrastructure
- Instructional Technology
- Application Services
- Data Accountability
- Community Connections



The background of the slide features a blurred image of a person with blonde hair, wearing a light green shirt, sitting at a desk. They are using a laptop and holding a white smartphone in their hands. The overall tone is professional and educational.

## MNPS IT Plan

# Infrastructure

- Recommendations Include
  - Fiber to All Buildings (65x Improvement Over E-Rate)
  - State-of-the-Art Local Area Networks (includes wireless)
  - Remote Connectivity (Secure Connections Needed for >6,000 Employees)
  - Remote Management (>40,000 Devices)
  - Student Focused Network (Digital Storage for Student Work >50,000 Students)
  - School Servers
  - Rotation of Equipment at End-of-Life
  - Security and Accountability Technologies
  - Disaster Recovery

# Infrastructure Summary

- **Key Investments:** Security, Remote Management, Central Storage, LAN Technology, Disaster Recovery
- **Benefits**
  - Necessary Security and Reliability
  - Economies in Management of Network
  - Capability of Local Area Network Greatly Enhanced
  - Build-out of Storage Needs Include Students
  - Access From Outside of MNPS Network
- **Cost**
  - Estimate \$36 Million in Five-Year Capital and \$3-4 Million in Annual Recurring Capital
  - Estimate \$2 Million in Additional Operating Budget Needs

# Instructional Technology

- Recommendations Cover
  - School and Classroom of 2011
  - School and Classroom Funding
  - Technology Content Standards
  - Professional Development
  - User Support

# School and Classroom 2011

The Following Technology Components are Envisioned to be a Part of the 2011 School and Classroom

- Each Classroom
  - LCD Projector
  - Teacher Laptop
  - Classroom Printer
  - Student Accessible PC
  - Teacher/Student Slate
  - Instructional Materials
  - Intranet Access
  - Standard Software
- School-Level
  - Wireless Laptop Carts
  - Response Pads
  - Graphing Calculators
  - Science Probes
  - Fixed Computer Labs
  - Increased Library Access
  - Standard Software
  - Increased Printers
  - Admin. Laptops/Handhelds



# School and Classroom Funding \*\*

- IT Priorities Customized by School
- IT Purchases From Products and Services Catalog
- Formula Funded to Avoid Supplanting
  - Estimate \$500 per classroom for 2006-07
  - Estimate \$1,500-\$2,000 per classroom 2007-2008
- Three Categories of Purchases
  - School/Classroom Core (85%)
  - School/Classroom Optional Core (10%)
  - Optional Items (5%)
- Funds Carry Over Year to Year
- Funds Can be Suspended if Goals Not Met
- Infrastructure and Professional Development Items Funded Separately

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**\*\* \$43 Million Estimated Investment for Next 5 Years**

# Category Explanation with Product Catalog Examples

- Category: Core – All schools/classrooms are planned to have these technologies by 2011 – No options on Products
  - Product Catalog Examples: Teacher Laptop, LCD, Response Pads, Student Accessible Classroom Computer, Slate, Wireless Lab (cart), Electronic White Board, Streaming Video, Staff Development
- Category: Optional Core – Items are optional but if school chooses to purchase they are restricted to products in the catalog
  - Product Catalog Examples: Intervention Software, Some Science Probes and Equipment, Some Types of Staff Training
- Category: Optional – Items are optional and the school can source and purchase
  - Examples: Digital Cameras

# School and Classroom Funding

- **Demonstration Schools**
  - 6 Schools Selected for Accelerated Deployment of Technology
  - Complete Demonstration Schools in 2 Years
  - Other Schools Will Take 5 Years for Full Deployment
  - Six Demonstration Schools from Two Clusters
    - Stratford Cluster – Ross, Bailey, Stratford
    - Hillwood Cluster – Westmeade, Bellevue, Hillwood

# Technology Content Standards

- Content Areas Standards Incorporate Technology
- Technology Standards, Aligned With National Standards, Focus on Technology Literacy and are Being Implemented During 06-07 School Year
- 8<sup>th</sup> Grade Assessment is Being Developed During the 06-07 School Year
- Issues:
  - Need for Instructional Technology Teaching and Learning Focus
  - Need for Technology Resources That Support District Standards
  - Need for More Professional Development That Models Effective Technology Integration Practices
  - Student Scheduling Challenges – Especially When Reading Interventions Are Needed



# Professional Development

- Increase Technology Professional Development Staff and Courses That Focus on Technology Integration and Model Best Practices
- Hire Technology Coaches (based on formula) to Work With School Administrators in Developing Strategies for Technology Integration
- Formulate Professional Development Training Packages (Basics, One-Computer Classroom, Data-driven Instruction) That Support Objectives and Outcomes
  - Need pre-assessment of teachers and waivers
  - Issue: Do we certify school based on staff competencies?
  - Issue: How do we manage/fund with other academic priorities?
- Implement Administrator/Teacher Standards

The background of the slide is a faded, high-angle photograph of a computer laboratory. Several people are seated at long wooden desks, each equipped with a computer monitor, keyboard, and mouse. The individuals are focused on their work, with some looking at the screens and others at their keyboards. The overall atmosphere is one of a busy, functional workspace.

# User Support

- Timely and Competent Support is a Must
- Technician to Computer Ratio Target < 1 to 500
- Help Desk Responsiveness and Tracking
- Role of TTRM and Technician
  - Communication of District Initiatives
  - Facilitate Planning and Training
  - Respond to User Problems
  - End-User Training and Modeling

# Instructional Technology Summary

- **Key Investments:** Classroom Technologies, e.g., Wireless Laptop Carts, Response Pads, Teacher Laptops, etc
- **Benefits**
  - Equipment Available on Demand for Teachers
  - Strategy Includes Timely Support for Teachers
  - Student Engagement in Material When Technology Used
  - Higher Student Achievement, Attendance
  - Lower Rate of Discipline Issues
- **Cost**
  - Estimate \$43 Million in Five-Year Capital and \$2-3 Million in Annual Recurring Capital
  - Estimate \$2.6 Million in Additional Operating Budget Needs

## MNPS IT Plan

# Application Services

- This Portion of the Plan Covers the Software Applications That are Needed to Operate the District
- Recommendations Include:
  - Replacing all Remaining Mainframe Applications
  - Development of Attendance Referral and Tracking Module
  - Development of Transfer Approval System
  - Conversion of Special Ed and ELL to SMS
  - Implement SIF for Data Integration with SMS
  - Implement SMS Enhancements Including
    - Program Management
    - Student Photos
    - K-12 Planet and Gradebook
    - Test Management and Graduation Plans



## MNPS IT Plan

# Application Services

- Recommendations Continued
  - Implement and Integrate Food Services and Point-of-Sale
  - Implement and Integrate Textbook Inventory System
  - Implement School Websites and Intranet
  - Implement EBS Modules
    - Electronic School Funds Accounting System
    - HR System Upgrades
    - Inventory Control
    - E-Procurement
    - Electronic Work Order System
    - Employee Portal
  - Test and Implement Other Technologies as Appropriate, e.g., Imaging, Workflow, Employee and Student ID Technology



# Applications Services Summary

- **Key Investments:** Completion of Food Services, Textbook Inventory, SIF Implementation, SMS Enhancements and Extensions, EBS Additions
- **Benefits**
  - Improved Productivity
  - More Accurate and Timely Information
  - Reduced Textbook Expenses
  - Enhancements to FARL – Increased Fed Funding
  - Lower Integration Operating Cost
- **Cost**
  - Estimate \$5 Million in Five-Year Capital Cost
  - Estimate \$300K in Additional Operating Budget Needs

# Data Accountability

- This Portion of the Plan Covers Improvements in Data Accuracy and Reporting for Management Purposes
- The Data Accountability Initiatives are in Phases as Follows:
  - Phase 1 – 2008: Ensure Quality of MNPS Data
  - Phase 2 – 2009: Design District Data Model Tied to New Strategic Plan
  - Phase 3 – 2011: Implement Data Model to Enhance Data Reporting and Accountability
    - Includes 2 phases of a Data Warehouse project

# Data Accountability Summary

- **Key Investments:** Database Design, Data Warehousing Technologies
- **Benefits**
  - More Accurate Information
  - Streamlined Data Collection / More Efficient Data Management
  - Data Reporting Aligned with Strategic Plan/Policy Governance
  - Improved Response Times for Data Requests
  - Improved Capability for Data Requests and Research
- **Cost**
  - Estimate \$1 Million in Five-Year Capital Costs
  - Estimate \$100K in Additional Operating Budget Needs

A background image of a smiling woman with curly hair looking at a laptop screen.

## MNPS IT Plan

# Community Connections

- This Portion of the Plan Addresses the Critical Ways That Technology is Used to Link the Community with the Schools
- Recommendations Include (some overlap with other sections):
  - Improve Communications with Parents
    - Parent Notification System and Enhancements
    - K-12 Planet
    - Improved School Websites
    - Parent Volunteer Tracking in SMS
  - Increase Services for Parents and Community
    - Academic Support for students and families
    - On-line family data update
    - Information Kiosks



# Community Connections Summary

- **Key Investments:** K-12 Planet, Improvements to Web Technology, Software Development for Improved Services to Parents
- **Benefits**
  - Improved Communications with Parents and Community
  - Improved Services for Parents
- **Cost**
  - Costs Included in Other Sections of the Plan

# MNPS IT Plan Cost Summary

Area	Five-Year Capital	On-Going Annual Capital	On-Going Annual Operating
Infrastructure	\$36 M	\$1-2M	\$2M
Instructional Technology	\$43 M	\$2-3M	\$2.6M
Application Services	\$ 5 M	---	\$300K
Data Accountability	\$ 1 M	---	\$100K
Community Connections	Included above	---	---

Reasons

Reasons

### Characterized By:

- High Student to Computer Ratios
- Low Instructional Use of Technology in Classroom and Assignments
- Technology Largely Focused on the PC
- Use Largely Limited to Drill and Practice

**Conservative**

### Characterized By:

- Very Low Student to Computer Ratios - Often Times One to One
- Aggressive Coaching and Mentoring in the Use of Instructional Technology
- More Project and Inquiry-based Work
- Use of a Wide Variety of Technology Tools
- Involvement of Community and Workplace

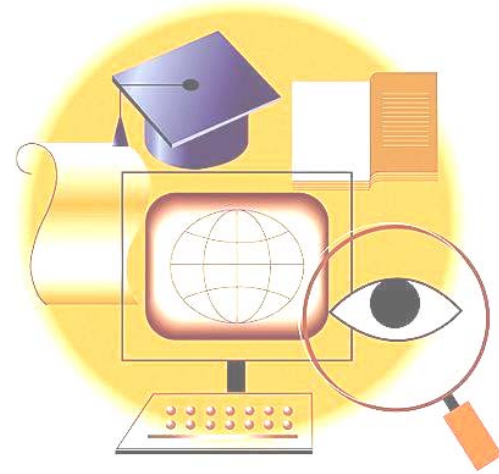
**Progressive**

**Continuum of District Technology Commitments**

# Critical Success Factors for IT Plan

- Financial Commitment
  - \$15-\$20 million Capital Each of Next 5 Years
  - \$3-\$5 million in On-Going Replacement Capital
  - Increase in \$5 million in operating budget (ramped up gradually over 5 years)
- Business-Grade Infrastructure
- Large Commitment to Professional Development
- Accountability for Changing Teaching and Learning
- Involvement and Commitment of Community
- Strong and Competent Building Leadership

# A Vision for the Future



- District Reforms highly dependent on teacher and student embracing technology
- Students graduating with skills needed to be successful in college and workplace
- Involvement of Nashville's Technology community in supporting our students and teachers
- Being positioned to issue computing devices to students in supportable way
- Elimination of textbooks by providing on-line access to information
- Engaged students that want to be in our classrooms because of the educational approach and opportunity